

## Management of a Child With Decreased Conscious Level- Full Clinical Paediatric Guideline – Joint Derby and Burton

Reference no.: CH CLIN G99

### 1. Introduction

Decreased conscious level can be considered an acute neurological emergency. It requires rapid assessment and a methodical approach to evaluation and assessment.

These guidelines are to ensure all children presenting to with a decreased conscious level receive the appropriate assessments and investigations, in a timely manner to help establish the cause quickly so that potentially life-saving treatment can be initiated without delay.

### 2. Aim and Purpose

To ensure children with decreased conscious level are managed appropriately.

This guideline covers all children aged 0-18 years presenting to the Emergency Department with a decreased level of consciousness (GCS <15 or V, P, or U on AVPU scale). These guidelines are for the initial management within the first 4 hours of presentation, and further management will depend on the underlying cause.

Babies on the neonatal unit, children with known conditions where there is an agreed management plan in place, and those children with a normal GCS <15 are excluded.

### 3. Definitions, Keywords

A decreased conscious level may be the result of a number of different conditions, ranging from traumatic injury, infections, and intoxication to metabolic illnesses. In some cases it can prove to be fatal.

In children, coma is caused by a diffuse metabolic insult (including cerebral hypoxia and ischaemia) in 95% of cases, and by structural lesions in the remaining 5%. Metabolic disturbances can produce diffuse, incomplete and asymmetrical neurological signs falsely suggestive of a localised lesion. Early signs of metabolic encephalopathy may be subtle, with reduced attention and blunted affect.

The conscious level in metabolic encephalopathies is often quite variable from minute to minute.

### **Causes**

- Shock (hypovolaemic, distributive or cardiogenic)
- Hypoxic ischaemic brain injury following respiratory or circulatory failure
- Convulsions
- Trauma
- Intracranial haemorrhage
- Sepsis
- Meningitis
- Encephalitis
- Cerebral and extra cerebral abscesses
- Malaria
- Intoxication/poisoning
- Metabolic
  - Renal or hepatic failure
  - Hypo- or hypernatraemia
  - Hypoglycaemia
  - Hypothermia
  - Hypercapnia
  - Inherited metabolic disease
- Cerebro-vascular event
- Cerebral tumour
- Hydrocephalus, including blocked intra-ventricular shunts
- Hypertension

### **Core investigations (all children)**

- Blood gas and capillary glucose within 15 minutes of arrival
- U&E
- LFT
- Ammonia (sent to lab on ice)
- Glucose
- FBC
- Blood culture
- Urinalysis
- Plain tube and Lithium heparin tube for save
- Urine for save

### **Initial Assessment**

#### **Airway**

Consider intubation if

- GCS <8 or falling (responding only to pain, or unresponsive)
- Airway obstruction
- SaO<sub>2</sub> less than 92% in high flow oxygen
- Signs of shock despite 40ml/kg fluid boluses
- Exhaustion
- Signs of increased intracranial pressure
- Inability to protect airway (vomiting, absent cough/gag)

#### **Breathing**

- Ensure high flow oxygen is in place
- Respiratory rate
- Continuous SaO<sub>2</sub> monitoring

#### **Circulation**

- Heart rate and continuous ECG monitoring
- Capillary refill time
- Blood pressure

#### **Disability**

- GCS (Must be reassessed and documented every 15 minutes).
- Pupil size and reaction
- Posture
- Neck stiffness/bulging fontanelle
- Convulsive movements
- Signs of increased intracranial pressure
- Capillary glucose (within 15 minutes of arrival)

#### **Exposure**

- Rash
- Temperature

### **History**

- Length of symptoms

The presence or absence of any of the following should be documented:

- Vomiting
- Headache
- Fever
- Convulsions
- Alternating periods of consciousness
- Trauma
- Ingestion alcohol/drugs and presence of drugs/chemicals at home
- Previous infant deaths in family
- Known neurological/medical condition e.g. renal, cardiac, diabetes
- Time of last meal

**Secondary Assessment**

- Fundal changes – haemorrhage and papilloedema (trauma, hypertension)
- Ophthalmoplegia – lateral or vertical deviation
- Reassess posture and tone – look for lateralisation
- Assess deep tendon reflexes and plantar responses – look for lateralisation
- Skin: rash, haemorrhage, trauma, evidence of neurocutaneous syndromes
- Scalp: evidence of trauma
- Bloody or clear discharge from ear (base of skull fracture)
- Neck: tenderness or rigidity. Meningitis, cerebrovascular accident
- Odour. Alcohol intoxication, ketones in DKA, metabolic disorder
- Abdomen: enlarged liver (in conjunction with hypoglycaemia may suggest metabolic condition).

**4. Main body of Guidelines****Definitive Management**

This is dependent on cause and history, examination and initial investigations should inform this. The following guidelines should be followed.

<b>Cause</b>	<b>Guideline</b>
Sepsis	CH Clin G126, G84 – both guidelines – Joint Derby & Burton
Head injury	CH Clin C20
DKA	CH Clin D03
Hypoglycaemia	CH ISCG 12
Meningitis/encephalitis	CH Clin G46 – Joint Derby & Burton
Prolonged seizure	CH Clin G45 – Joint Derby & Burton

If raised ammonia (>200micromol/ml)

- Check plasma amino acids, urine amino and organic acids, and coagulation screen
- Seek urgent advice from a metabolic specialist
- Start IV Sodium Benzoate (see cBNF for dose)
- If ammonia >500, or not improving consider urgent need for haemodialysis.

If evidence of raised intracranial pressure

- Consider urgent CT scan
- Nurse with head in midline and bed tilted head up 20 degrees
- Maintain PaCO<sub>2</sub> between 4.0 and 4.5kPa if ventilated
- Give mannitol or 3% saline (see cBNF for doses).

In acute alcohol intoxication

- Monitor blood glucose as this can be reduced.
- Consider testing blood alcohol level
- It is also important to consider the possibility of head injury.
- Once GCS is normal can be discharged if safe.

If cause remains unknown further investigations are needed:

- CT/MRI scan
- Urine toxicology
- Urine organic and amino acids
- Plasma lactate
- (Lumbar puncture if safe)

## 5. References (including any links to NICE Guidance etc.)

- “Advanced Paediatric Life Support (6<sup>th</sup> Edition)”. Advanced Life Support Group 2016.
- “Management of children and young people with an acute decrease in conscious level. Clinical guideline 2015.” Royal College of Paediatrics and Child Health.

## 6. Documentation Controls

<b>Reference Number</b> CH CLIN G 99	<b>Version:</b> 4.0.0		<b>Status</b> Final	<b>Author:</b> Dr J Mott <b>Job Title:</b> Consultant
Version / Amendment History	Version	Date	Author	Reason
	3.0.0	Oct 2020	Dr J Mott	Review and update. Merged into UHDB guideline
	4.0.0	Nov 2023	Dr J Mott	Review and update
<b>Intended Recipients:</b> All staff working in the Children Emergency Department.				
<b>Training and Dissemination:</b> Cascade the information via BU newsletter and address training.				
<b>Development of Guideline:</b> Dr Julie Mott Consultant Paediatric Emergency Medicine				
<b>In Consultation with:</b> Derby and Burton Paediatricians.				
<b>Linked Documents:</b> (Nice guidance/Current national guidelines) State the name(s) of any other relevant documents				
<b>Keywords:</b> Conscious Level				
<b>Business Unit Sign Off</b>			<b>Group:</b> Paediatric Guidelines Group <b>Date:</b> 28/11/2023	
<b>Divisional Sign Off</b>			<b>Group:</b> Women’s and Children’s Clinical Governance Group <b>Date:</b> 30 <sup>th</sup> November 2023	
<b>Date of Upload</b>			01/12/2023	
<b>Review Date</b>			October 2028	
Contact for Review			Dr J Mott	